CLAIMS

Please amend the claims as follows and enter new claims 55-60 for consideration.

Claims 1-27 (Canceled)

28. (Currently amended) A method for ultrasonically chemically-etching a workpiece, said method comprising

providing an inner tank having an inner surface comprising a chemically-resistant polymer and defining an upper mouth and being receptive to the workpiece, wherein said inner tank is at least partially disposed within an outer tank at least partially filled with an aqueous solution;

at least partially filling the inner tank with at least 1 liter of an etching solution having a total acidity or basicity of at least 10%;

immersing the workpiece into the etching solution;

~~covering~~sealing the mouth of the inner tank with a lid to enclose the etching solution and to increase the partial pressure above the etching solution; and

ultrasonically agitating the etching solution with an ultrasonic transducer coupled to the outer tank outside of the aqueous solution to accelerate the etching of the workpiece.

29. (Previously presented) The method of claim 28, further comprising a heating element for regulating the temperature of the aqueous solution.

30. (Previously presented) The method of claim 28, further comprising a mechanism adapted to impart relative motion between the workpiece disposed in said inner tank and said ultrasonic transducer.

31. (Previously presented) The method of claim 30, wherein the mechanism comprises a rod extending through the lid and coupled to the workpiece.

32. (Previously presented) The method of claim 28, further comprising an exhaust hood which is located above the tanks and compatible with gases produced from at least one of the aqueous solution and the etching solution.

33. (Previously presented) The method of claim 28, further comprising an ultrasonic buffer positioned within the aqueous solution for dampening and/or diffusing the sonic energy imparted to the etching solution.

34. (Currently amended) The method of claim 28, wherein the ultrasonic transducer ~~is positioned outside of the aqueous solution and~~ is operably connected to a power oscillator.

35. (Previously presented) The method of claim 28, further comprising a probe positioned within the etching solution for monitoring one or more of the ultrasonic energy, temperature, temperature variations and impurity concentration.

36. (Previously presented) The method of claim 28, wherein the aqueous solution is a filtered and recirculated deionized water bath.

37. (Previously presented) The method of claim 28, wherein the etching solution is essentially static.

38. (Currently amended) The method of claim 28, wherein the inner tank and any portion of the rotational mechanism that may come into contact with the etching solution ~~comprises~~is a material selected from the group consisting of a fluorine resin and high density polyethylene.

39. (Previously presented) The method of claim 38, wherein the inner tank generates less than 10 ppb of leachable metal contaminants and 10 ppm of leachable anionic and organic contaminants.

40. (Currently amended) The method of claim 28, wherein the etching solution ~~comprises~~is an acid selected from the group consisting of hydrofluoric acid, nitric acid and hydrochloric acid.

41. (Currently amended) The method of claim [[40]]28, wherein the acidic solution comprises hydrofluoric acid, nitric acid and water in a ratio selected from the group consisting of 1:1:1, 1:2:2 and 1:7:[[4]]2.

42. (Previously presented) The method of claim 28, wherein the temperature of the aqueous solution is maintained from about 20°C to about 50°C.

43. (Previously presented) The method of claim 28, wherein the workpiece is selected from the group consisting of silicon carbide, quartz, ceramic and silicon.

44. (Previously presented) The method of claim 30, wherein the mechanism comprises a rotary motion actuator for rotating said substrate about an axis.

45. (Previously presented) The method of claim 44, wherein the axis is a substantially horizontal axis.

46. (Previously presented) The method of claim 44, wherein the axis is a substantially vertical axis.

47. (Currently amended) ~~The method of claim 30,~~A method for ultrasonically chemically-etching a workpiece, said method comprising:

providing an inner tank having an inner surface comprising a chemically-resistant polymer and defining an upper mouth and being receptive to the workpiece, wherein said inner tank is at least partially disposed within an outer tank at least partially filled with an aqueous solution;

at least partially filling the inner tank with at least 1 liter of a etching solution having a total acidity or basicity of at least 10%;

immersing the workpiece into the etching solution;

covering the mouth of the inner tank with a lid to enclose the etching solution and to increase the partial pressure above the etching solution; and

ultrasonically agitating the etching solution with an ultrasonic transducer coupled to the outer tank to accelerate the etching of the workpiece mechanism adapted to impart relative motion between the workpiece disposed in said inner tank and said ultrasonic transducer, and wherein the mechanism comprises a rotary motion actuator for rotating said inner tank and/or said ultrasonic transducer.

48. (Currently amended) The method of claim 28, wherein [[the]]a cross-section of the lid is substantially the same as the cross section of the mouth of the inner tank.

49. (Currently amended) The method of claim 48, wherein [[the]]a mouth of the inner tank and the lid each have a circular shape corresponding to [[the]]a cross-section of the lid.

50. (Currently amended) The method of claim 28, wherein [[the]]a horizontal cross-section of the inner tank is substantially the same as [[the]]a horizontal cross section of the workpiece.

51. (Previously presented) The method of claim 28, wherein the mouth of the inner tank has a shape selected from the group consisting of a square, rectangle, triangle, circle and oval.

52. (Previously presented) The method of claim 28, wherein the inner tank has a shape selected from the group consisting of a rectangular parallelpiped, cube and cylinder.

53. (Previously presented) The method of claim 28, wherein the etching solution comprises a base selected from the group consisting of sodium hydroxide and potassium hydroxide.

54. (Previously presented) The method of claim 53, wherein the etching solution comprises 30% potassium hydroxide.

55. (New) The method of claim 28, wherein the etching solution is a basic solution consisting of potassium hydroxide and water.

56. (New) The method of claim 55, wherein the basic solution is 5-50%wt. potassium hydroxide and 50-95%wt. water.

57. (New) The method of claim 55, wherein the basic solution is 20-30%wt. potassium hydroxide and 70-80%wt. water.

58. (New) The method of claim 28, wherein the workpiece is selected from the group consisting of silicon carbide, quartz and ceramic.

59. (New) The method of claim 28, wherein the acidic solution comprises hydrofluoric acid, nitric acid and water.

60. (New) The method of claim 28, wherein the inner tank and any portion of the rotational mechanism that may come into contact with the etching solution is comprised of a fluorine resin and the inner tank generates less than 10 ppb of leachable metal contaminants and 10 ppm of leachable anionic and organic contaminants.